What is claimed is:

1. A method of filling an opening in an oxide layer, over a liner layer formed on a surface of a silicide substrate underlying both the oxide layer and the liner layer, comprising the steps of:

forming a first continuous layer comprising silicon, on the oxide layer and on the liner layer; and

forming a second layer, comprising a refractory material, on the first layer so as to cover the same and to also substantially fill the opening.

2. The method according to claim 1, wherein:

the first layer is a continuous layer of one of amorphous or polycrystalline that has a thickness not greater than about 50Å.

3. The method according to claim 1, wherein:

the second layer is formed by either a physical vapor deposition (PVD) or a chemical vapor deposition (CVD) process step at a first temperature in the range 500°C to 650°C.

4. The method according to claim 3, wherein:

the first temperature is approximately 600°C.

5. The method according to claim 1, wherein:

the refractory material contains a metal selected from a group of refractory metals consisting of titanium, tantalum, molybdenum and tungsten.

6. The method according to claim 5, wherein:

the refractory material comprises one of the selected metals deposited as a metal, as a component of a nitride of the metal, or as a component of an alloy of the metal.

7. The method according to claim 1, wherein:

the first layer sacrificially protects the underlying liner and the silicide layer during the step of forming the second layer.

8. The method according to claim 7, wherein:

the first layer serves as a nucleation layer for deposition of the second layer thereon.

9. The process according to claim 3, wherein:

a second layer is formed at a second temperature that is lower than the first temperature.

10. The method according to claim 8, wherein:

the first layer is a continuous polysilicon layer that has a thickness not greater than about 50Å.

11. The method according to claim 10, wherein:

the second layer is formed by either a physical vapor deposition (PVD) or a chemical vapor deposition (CVD) process step at a first temperature in the range 500°C to 650°C.

12. The method according to claim 11, wherein:

the refractory material contains a metal selected from a group of refractory metals consisting of titanium, tantalum, molybdenum and tungsten.

13. The method according to claim 12, wherein:

the refractory material comprises one of the selected metals deposited as a metal, as a component of a nitride of the metal, or as a component of an alloy of the metal.

14. The method according to claim 13, wherein:

the first layer sacrificially protects the underlying liner and the silicide layer during the step of forming the second layer.

15. The method according to claim 14, wherein:

the first temperature is approximately 600°C; and

the second layer is formed at a second temperature that is lower than the first temperature.

16. A multilayer structure, comprising:

a silicide layer, having a first surface;

an oxide layer, formed on the first surface and having a second surface, with an opening through the oxide layer defined by an opening wall extending from the second surface to the first surface;

a liner layer, formed on the first surface at a bottom of the opening;

a continuous silicon layer, formed to extend over the second surface, the opening surface and the liner layer; and

a refractory material layer, formed on the silicon layer and substantially filling the

opening.

17. The structure according to claim 16, wherein:

the first layer is a continuous polysilicon layer that has a thickness not greater than about 50Å; and

the second layer is formed by either a physical vapor deposition (PVD) or a chemical vapor deposition (CVD) process step at a first temperature in the range 500°C to 650°C.

18. The structure according to claim 17, wherein:

the refractory material comprises a metal selected from a group of refractory metals consisting of titanium, tantalum molybdenum and tungsten; and

the refractory material comprises one of the selected metals deposited as a metal , as a component of a nitride of the metal, or as a component of an alloy of the metal.

19. The structure according to claim 18, wherein:

the first layer sacrificially protects the underlying liner and the silicide layer during the step of forming the second layer; and

the first layer serves as a nucleation layer for deposition of the second layer thereon.

20. The structure according to claim 19, wherein:

the first temperature is approximately 600°C; and

the second layer is formed at a second temperature that is lower than the first temperature.

21. The method according to claim 1, wherein:

the first layer is formed by a chemical vapor deposition (CVD) process and extends continuously on the oxide layer, a wall of the opening and the liner layer.

22. The method according to claim 1, wherein:

the liner layer comprises at least one of titanium, titanium nitride, tungsten, and an alloy of titanium and tungsten.

23. The method according to claim 1 wherein said first silicide layer is formed on a silicon substrate.